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ELEMENTARY SCIENTIFIC PAPERS,

BY E. G. WOOD,

OPTICIAN, &c., 74 (LATE 117), CHEAPSIDE,

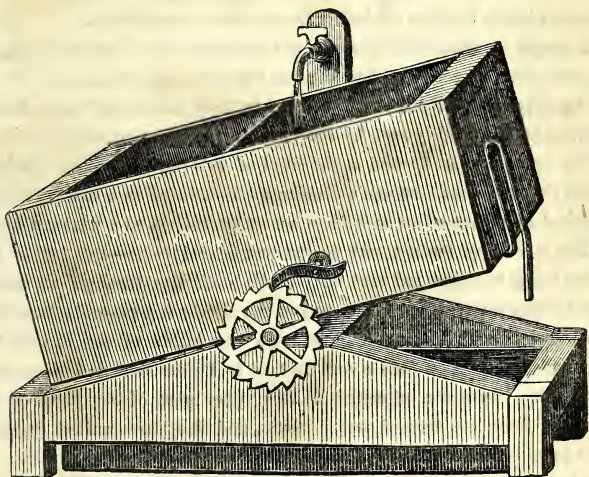
(BETWEEN QUEEN STREET AND BUCKLESBURY), LONDON, E.C.

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No. XII.

[*Stationers' Hall.*

HANBURY'S SELF-ACTING CRADLE FOR WASHING PHOTOGRAPHS.



THIS apparatus, the invention of CORNELIUS HANBURY, Esq., is the most perfect arrangement for Washing Photographic Pictures that has yet been devised.

Careful investigations have shown that the removal of hyposulphite of soda from the pores of the paper upon which pictures have been printed, is effected by the property which salts possess of diffusing themselves through a surrounding fluid in which they are soluble. This process, in the case of hyposulphite of soda in photographs, is however much impeded by the fact that the layer of water in *contact* with the surfaces of the picture, and which of course is most affected by the hyposulphite, adheres to the paper with great tenacity, and is not removed by merely pouring fresh water upon it. It is, therefore, easily seen why all methods of washing, that merely supply water to the vessel con-

taining the prints, without ensuring the substitution of fresh water to the *surface* of *each* picture, in the place of that impregnated with hyposulphite, must be ineffective.

A really good Washing Machine requires the following conditions to be satisfied:—

A separation of the prints one from the other during the whole time of washing, so that the fresh water may act upon *both sides* of *each* picture.

A complete discharge of all the water from the vessel containing the prints, with a sufficient interval for the layer in contact with the surfaces of each picture to drain off before fresh water is supplied.

A simple arrangement by which the alternate filling and emptying of the vessel can be accomplished without requiring any attention.

MR. HANBURY'S SELF-ACTING CRADLE fully realises all these *desiderata*, as will be readily seen by the following description:—

The apparatus, as figured at the head of this paper, consists of a long vessel (termed THE CRADLE), divided by a partition into two parts, and attached by means of an axis fixed across its bottom to a frame of wood, so that a rocking motion may be communicated to it—the top of the frame being so arranged that the Cradle oscillates through an arc of about thirty degrees. At each end of the Cradle a syphon is fixed, the short end of which communicates with the inside of the Cradle, the long end going down into a tray that is to be connected with a sink. Two close boxes are attached to the upper part of the ends of the Cradle; these are termed water boxes, and they are united together by a tube passing under the Cradle, but not communicating with it.

At the back of the wooden frame is a standard, through the top of which passes a tap, which is to be connected with the tank or cistern that is to supply the water. This tap thus becomes the *inflow* pipe, while the syphons act as the *outflow* pipes.

A series of perforated japanned plates, held together by a frame, is supplied to each compartment of the Cradle, and upon these plates the pictures are laid, one picture of the full size (or an equivalent number of small ones) being put on *each* perforated plate.

The mode of using the apparatus is extremely simple. The machine is to be placed in a convenient position, and the *inflow* pipe attached to a cistern from whence the water is to be derived. One of the *water boxes* (that at the lower end of the Cradle) is to be partly filled with water, and the apparatus is ready for use. The tap of the inflow pipe is now to be opened, and the water allowed to flow into the upper compart-

ment of the Cradle. When a quantity of water has run in sufficient to counterpoise the weight of water in the water box, the Cradle oscillates, the lower compartment becoming the upper, and the upper one the lower compartment. This change in position brings into operation the syphon at the end of what is now the lower compartment, and the discharge of the water commences; and it has also brought the *empty* compartment under the inflow pipe, and the water now runs into it. By the time that the water in the lower compartment is discharged, and a sufficient time for draining has elapsed, the upper compartment will be filled to the proper height, and the Cradle again oscillates, the now empty compartment is again brought under the inflow pipe, and the water in the filled one, which is now the lower compartment, begins to be discharged by the syphon. The same motion that effects the alternate filling and emptying of the compartments of the Cradle also transfers the water from one water box to the other, so that in all respects the machine is self-acting.

The rate at which the water enters by the inflow pipe must be slower than that by which the water is discharged by the outflow pipe, so that the lower compartment may be emptied, and time allowed for the prints to drain before the upper compartment is full enough to produce the oscillation of the Cradle; and, by means of the tap forming the end of the inflow pipe, this can be regulated with the greatest exactness. By increasing or diminishing the amount of water in the water box, a greater or less quantity of water will be required to cause the required oscillation of the Cradle. If there be too little water in the water box, the Cradle will oscillate before sufficient water has been admitted to the upper compartment to cover the prints properly; if the water box has too much water in it, the *upper* compartment of the Cradle will require to have so great a quantity of water in it before it can counterpoise the water box, that the syphon will be brought into action, and the water discharged, without any oscillation taking place.

Commendatory notices of this apparatus have appeared in the various photographic publications—the *Photographic Journal* for November 16th, 1863, contains a lengthened description of the Cradle, which paper may be advantageously consulted by those interested in the subject. The *British Journal of Photography* repeatedly adverted to it; and in the No. for March 1st, 1864, the Editor, in replying to a correspondent on the subject, describes the “excellent apparatus” of Mr. HANBURY, which “is now as simple as it is effective, and with which the labour is reduced to a minimum.”

The Washing Cradle, as made for sale, is constructed of japanned tin, mounted on a strong deal frame, and supplied with six perforated japanned plates in *each* compartment. The Cradle can be made of gutta percha or ebonite, and the perforated plates can also be made of ebonite, but in these cases the cost of the apparatus is increased. Additional perforated plates can also be had.

The rochet wheel, shown in the figure at the head of this paper, is attached to the axis of the Cradle in order to register the number of oscillations made by the Cradle. The wheel is cut to twenty-five teeth, and the oscillations resulting from once *filling* and *emptying* each compartment moves the wheel on two teeth. When this has been done twelve times, the wheel will have nearly made one revolution; but as the number of teeth in the wheel is uneven, the further movements brings the reading point into the teeth that were skipped over in the first revolution, and consequently twenty-five complete oscillations are registered. The consecutive numbers on the wheel are placed on alternate teeth, and before the machine is set in action, the wheel should be turned round, so as to bring the reading point into the tooth marked twenty-five, which is of course the 0.

This part of the apparatus is not essential to the proper working of the apparatus, although it is a convenience—the expense of the apparatus is increased somewhat by it.

LIST OF PRICES.

	£	s.	d.
Hanbury's Self-Acting Cradle for Pictures up to $6\frac{1}{2} \times 4\frac{3}{4}$	2	10	0
Ditto, ditto for Pictures up to $8\frac{1}{2} \times 6\frac{1}{2}$	3	5	0
Ditto, ditto for Pictures up to 11×9	4	10	0
Ditto, ditto for Pictures up to 12×10	5	10	0
Ditto, ditto for Pictures up to 23×18	8	8	0

The addition of the registering apparatus to the smallest size apparatus adds 15s. to the cost, and when added to the larger machine increases the price 20s.

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